DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
ACQUISITION LOGISTICS AND TECHNOLOGY
103 ARMY PENTAGON
WASHINGTON DC 20310-0103

09 DEC 2002

REPLY TO
ATTENTION OF

Dr. Joe Braddock
Chair, Army Science Board
2511 Jefferson Davis Highway, Suite 11500
Arlington, Virginia 22202

Dear Dr. Braddock:

I request the Army Science Board (ASB) conduct a study on Challenges and Opportunities in Developing the Block II and Block III Future Combat System (FCS). The study should address, but is not limited to, the Terms of Reference (TOR) described below. The ASB members and consultants appointed to this study should consider the TOR as guidelines and may expand the study to issues considered important to the study. Modifications to the TOR must be addressed with you.

Background:

a. The Army is embarking on the development of the FCS as the newest component of the Objective Force. The First Unit Equipped and Initial Operational Capability (IOC) for this component will occur in 2008 and 2010, respectively. Beyond these initial dates for fielding "Block 0" FCS, there will be some combination of block upgrades and/or spiral development and fielding over the next decades.

b. The FCS represents a quantum growth in the application of technologies, communications, sensing, materials, energetics, etc., leading to the achievement of a fully air mobile, medium weight, low theater support footprint force. The ASB addressed technologies and operational utility and feasibility of FCS in what has been their nascent stage, focusing on the state of technology possibilities with related readiness.

c. Building on that base, I therefore, request the ASB conduct this study, and focus its attention on challenges that are of a type and scale not yet encountered by the Army, or Department of Defense (DoD), for that matter, and not those that are modest extensions beyond the IOC. The study is to define major challenges and possible technology solutions for FCS Blocks two and three in the 2015-2025 timeframe. It should also examine the same or similar challenges facing other Services and the industrial and commercial sectors as these might contribute insights and suggest possible solutions.

TOR:

a. Suggest technology insertion priorities, technical risks, and integration risks affecting the accelerated transition of technology to battlefield capability that leverages joint interdependency and interoperability and achieves a high level of survivability against mechanized and armored forces.

b. Examine expansion of C4ISR capabilities that leverages future sensors, processors, and novel platforms and management of large numbers of sensors with assured connectivity, minimum effect of its loss and enabling rapid recovery.

c. Examine the difficult task of automating sensor and data fusion for large numbers of sensors to enable: Automated target weapon pairing, augmented soldier-in-the-loop decision-making, and transforming disorganized data into knowledge.

d. Investigate advanced technologies including simulation for including imbedded training, mission planning, and rehearsal capabilities in the FCS systems.

e. Assess technologies to enable the collaborative, simultaneous employment of manned and unmanned platforms and technologies to enable air and ground systems to operate in fully autonomous modes. Additionally, examine technologies to improve the lethality of weapons and achieve high survivability of soldiers and platforms.

f. Address achieving and assuring software integrity across sensors, weapons and soldiers. Include self-healing and self-conforming networks in your assessment.

g. Identify robust countermeasures to overmatch technology proliferation.

h. Identify approaches to enhanced reliability and implications to the industrial base.

i. Suggest approaches to assessing affordability across Joint Mission Areas.

Report on technologies to achieve a biometric or other verifiable signature standard that permits or denies soldier access (supported by soldier clearance level) to multi-level systems connected to FCS such as Land Warrior, Force XXI Battle Command Brigade and Below and thus the Army Battle Command System.

The ASB should identify and provide the rationale for a list of the most challenging technological cases. It should seek solutions or, as a minimum, insights for solutions in both DoD and commercial sectors. It should also identify and rationalize the possibilities resident in revolutionary technologies that would support FCS development even where these displace existing technologies.

Study Sponsorship: I will be the primary sponsor. I recommend you contact the following organizations and request they support your study as sponsors: the United States Army Training and Doctrine Command, the United States Army Materiel Command, the Deputy Under Secretary of the Army, Operations Research, Objective Force Task Force, the Army G-3, the Army G-8, the Army G-4, and the Program Executive Office/Program Manager for Future Combat System.

Study Duration: Please initiate the study in December 2002, provide interim progress reports in February and May 2003, and report out during July 2003.

Sincerely,

Claude M. Bolton, Jr.

Claude M. Bolton, Jr.
Assistant Secretary of the Army
(Acquisition, Logistics and Technology)